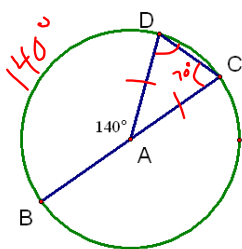
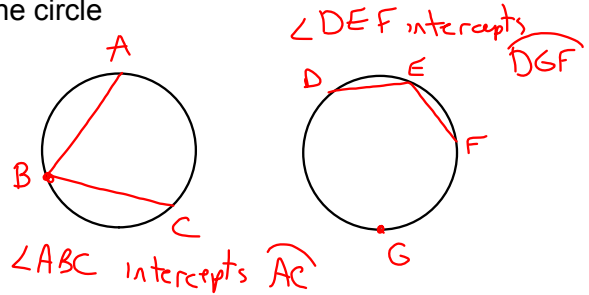


10-4 Use Inscribed Angles and Polygons

Inscribed angle--angle whose vertex is on the circle and whose sides contain chords of the circle



Name the inscribed angle in the picture. $\angle DCB$

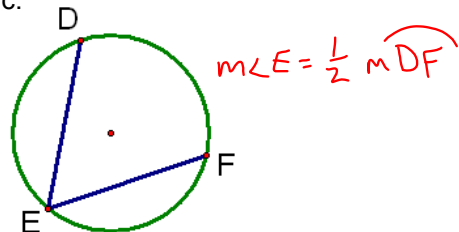
What arc does it intercept? \widehat{DB}

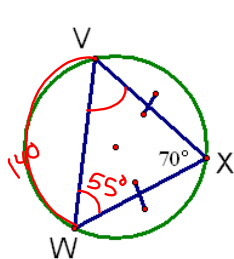
What is the measure of the intercepted arc? 140°

What is the measure of the inscribed angle? 70°

Theorem 10-7-- The measure of an inscribed angle Theorem The measure of an inscribed

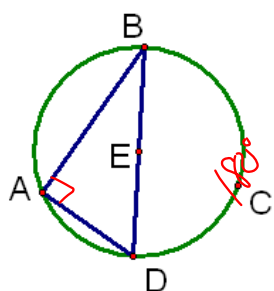
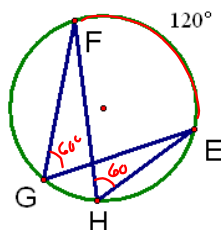
angle is $= \frac{1}{2}$ the measure of the intercepted arc.



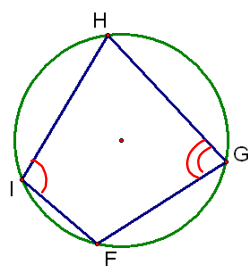


$$\begin{aligned} m\widehat{VW} &= 140^\circ \\ m\angle W &= 55^\circ \\ m\widehat{VX} &= 110^\circ \end{aligned}$$

Theorem 10.8--If 2 inscribed angles intercept the same arc, then the angles are congruent.



Theorem 10-9--If a right triangle is inscribed in a circle, then the hypotenuse is a diameter of the circle. Conversely, if one side of an inscribed triangle is a diameter of the circle, then the triangle is a right triangle and the angle opposite the diameter is the right angle.



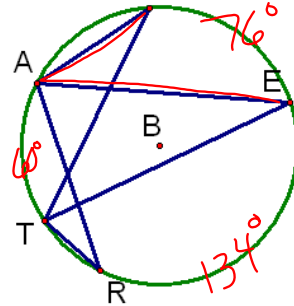
$$m\angle I = \frac{1}{2} m\widehat{HGF}$$

$$m\angle G = \frac{1}{2} m\widehat{FIH}$$

$$\begin{aligned} m\angle I + m\angle G &= \frac{1}{2} m\widehat{HGF} + \frac{1}{2} m\widehat{FIH} \\ m\angle I + m\angle G &= \frac{1}{2} (m\widehat{HGF} + m\widehat{FIH}) \\ &= \frac{1}{2} (360) \\ &= 180 \end{aligned}$$

Theorem 10-10--A quadrilateral is inscribed in a circle iff its opposite angles are supplementary

Example 1: L

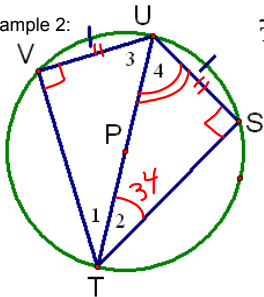


$$\begin{aligned} m\widehat{AT} &= 60^\circ \\ m\widehat{LE} &= 76^\circ \\ m\widehat{ER} &= 134^\circ \end{aligned}$$

Find

$$\begin{aligned} m\angle L &= 30^\circ \\ m\angle E &= 30^\circ \\ m\angle R &= 30^\circ \\ m\angle LAE &= 38^\circ \\ m\angle EAR &= 67^\circ \end{aligned}$$

Example 2:

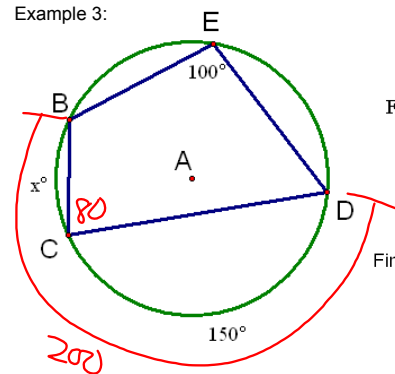


\overline{TU} is the diameter

$$\begin{aligned} m\angle 2 &= x + 9 \\ m\angle 4 &= 2x + 6 \\ \text{Find} \\ m\angle 1 &= 34^\circ \\ m\angle 2 &= 34^\circ \\ m\angle 3 &= 56^\circ \\ m\angle 4 &= 56^\circ \\ m\widehat{US} &= 68^\circ \\ m\widehat{ST} &= 112^\circ \end{aligned}$$

$$\begin{aligned} x + 9 + 2x + 6 &= 90 \\ x &= 25 \end{aligned}$$

Example 3:



Find x.

$$50^\circ$$

Find $m\angle C$.

$$= 80^\circ$$

HW p676
#s 3-15